



NetShelter™

AR1000

AR1001

AR1100

Thank You!

Thank you for selecting this American Power Conversion NetShelter enclosure. It has been designed for easy installation of rack-mount equipment including American Power Conversion power protection products. American Power Conversion is dedicated to the development of high quality products that protect your network environment.

Please read this manual! It provides instructions that will ensure proper and safe installation of your NetShelter enclosure.

Save this manual! It includes instructions for obtaining warranty service.

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Chapter 1 Preliminary Information

Introduction

Overview

This American Power Conversion (APC) NetShelter™ is a high-quality enclosure designed for storage of industry-standard 19" rack-mount hardware. This includes: servers, voice, data, networking, internetworking, and APC power protection equipment. American Power Conversion is dedicated to the development of high quality products that protect your network environment.

About this Manual

This manual provides instructions that will ensure proper and safe installation of your NetShelter enclosure. Please keep this manual—it includes instructions for obtaining warranty service.

Three NetShelter Models

APC offers three NetShelter models. The AR1000 is a complete 42U[†] stand-alone enclosure. The AR1001 is a 42U expansion enclosure that easily connects to a single AR1000 to create a set of NetShelter bays. The AR1100 is a complete 22U stand-alone enclosure.

Continued on next page

[†] One U = 1.75 in. (4.44 cm). On the NetShelter, a U is represented as a notched mounting hole and one mounting hole immediately above and below it.

Introduction *continued*

Features of the NetShelter

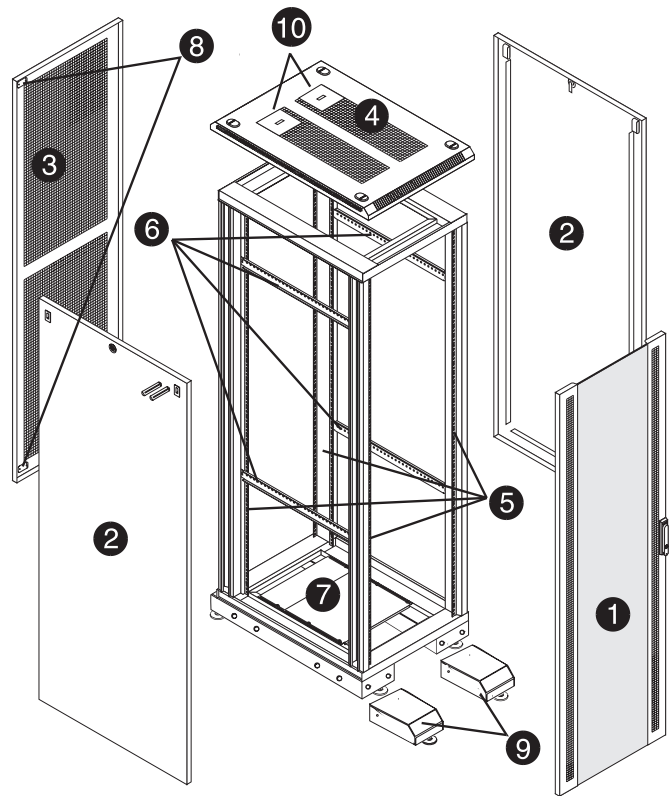
NetShelter provides the following features:

- 42U (73.5") or 22U (38.5") storage height for 19" rack-mount equipment
 - Fully ventilated doors and roof
 - Smoked, tempered glass front door
 - Front and rear door locks
 - Quick release side panels with locks (AR1000 and AR1100)
 - Integrated Detachable Feet (AR1000 and AR1001)
 - Front Stabilization Plate (AR1100)
 - Cable access holes on roof
 - Adjustable leveling feet
 - Heavy duty casters
 - Adjustable bottom cable entry panels
 - Configurable rear vertical mounting rails and horizontal cross rails
 - Integrated mounting posts for mounting of the Measure-UPS™ Door Switch Sensors
 - Cable Management Hoops for easy and neat routing of cables
 - Ample clearance for wiring between front door and mounting rails
-

Product Inventory

**Components of
AR1000 and
AR1001:
Figure 1**

The following figure show the major components of the 42U enclosures.



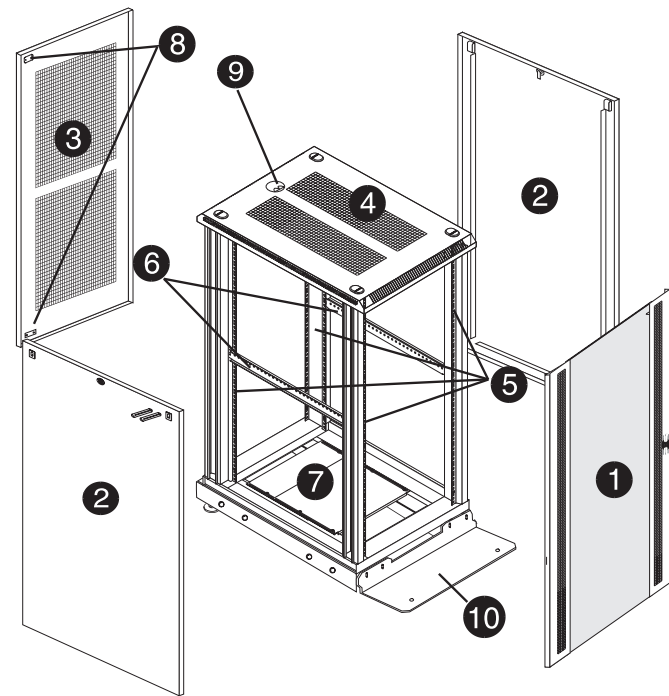
- | | |
|---------------------------|---|
| ❶ Front Door | ❷ Side Panels (AR1000) |
| ❸ Rear Door | ❹ Roof |
| ❺ Vertical Mounting Rails | ❻ Horizontal Cross Members |
| ❼ Cable Entry Panels | ❽ Mounting Posts for Measure-UPS Door Switch Sensors (front and rear doors) |
| ❾ Detachable Front Feet | ❿ Cable Access Holes |

Continued on next page

Product Inventory *continued*

**Components of
AR1100:
Figure 2**

The following figure show the major components of the 22U enclosure.



- | | |
|---------------------------|---|
| ① Front Door | ② Side Panels |
| ③ Rear Door | ④ Roof |
| ⑤ Vertical Mounting Rails | ⑥ Horizontal Cross Members |
| ⑦ Cable Entry Panels | ⑧ Mounting Posts for Measure-UPS Door Switch Sensors (front and rear doors) |
| ⑨ Cable Access Hole | ⑩ Front Stabilizer Plate |

Product Inventory *continued*

**Main Assembly
Inventory:
Table 1**

Table 1 shows the quantity of each item according to the model of enclosure.

Item	AR1000	AR1001	AR1100
Enclosure Frame	1	1	1
Ventilated Front Door	1	1	1
Ventilated Rear Door	1	1	1
Ventilated Roof	1	1	1
Bottom Cable Entry Panels	2	2	2
Vertical Mounting Rails	4	4	4
Casters	4	4	4
Leveling Feet	6	6	4
Detachable feet	2	2	–
Front Stabilizer Plate	–	–	1
Side Panels	2	–	2
Front/Rear Door Keys	2	2	2
Side Panel Keys	4	–	4

Continued on next page

Product Inventory *continued*

**Baying and
Mounting
Hardware
Inventory:
Table 2**

The NetShelter comes with the hardware you will need to make it a fully functional enclosure. Table 2 shows the quantity of each item according to the model of enclosure.

Type	Item	AR1000	AR1001	AR1100
Baying Hardware	Brackets	–	4	–
	Vertical Trim	–	2	–
	Horizontal Trim	–	1	–
Mounting Hardware	M6 × 18 mm Slotted Screws	60	60	60
	Caged Nut Installation Tool	1	1	1
	M6 Caged Nuts	60	60	60
	Plastic Cup Washers	60	60	60
	M6 Hex Nuts	–	8	–
	M5 Hex Wrench	1	1	1
	Cable Management Hoops	3	3	3

Warnings and Cautions



Introduction	Before you begin to unpack the enclosure, please read the following paragraphs. Attention to these warnings and cautions will help to prevent injury and damage.
Stabilize First	Stabilize the unit before installing the components into the NetShelter enclosure. Failure to do so could allow the enclosure to tip over and cause personal injury or property damage.
Extend Only One Component at a Time	Do not extend more than one component from the enclosure at one time. Extension of more than one component may cause the enclosure to become dangerously unstable. Before you extend any components, make sure that the enclosure is level and stable.
It Takes at Least Two Persons to Unpack	In order to minimize the possibility of personal injury or damage to the enclosure, at least two people take part in the unpacking process.
Load Heaviest Components First	In order to prevent the enclosure from becoming top-heavy, heaviest components should be loaded first and placed toward the bottom of the enclosure.
Disclaimer	American Power Conversion is not responsible for damage sustained during reshipment of this enclosure.

Preparing to Install the NetShelter

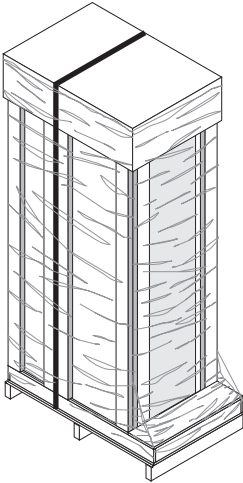
Tools Required for Setup

The following tools will be necessary to complete the setup and adjustment of the enclosure:

- Slotted screwdriver
 - Phillips screwdriver (#2)
 - 12 mm open-end wrench
 - 19 mm open-end wrench (AR1100 only)
 - Spirit level
 - Heavy-duty shears or utility knife
 - Caged nut tool (included)
 - 5 mm hex wrench (included)
-

Unpacking the Enclosure: Figure 3

The enclosure assembly is packaged for shipping and must be unpacked before it can be installed and loaded. To unpack the enclosure safely, follow these steps:



Continued on next page

Preparing to Install the NetShelter *continued*

Unpacking the Enclosure, continued

- 1 Move the shipping pallet containing the enclosure to a firm, level surface. Make sure that the area is sufficiently large and free of clutter. Inspect the enclosure for visible signs of shipping damage.
- 2 Refer to the label on the exterior of the packaging to determine the proper place to cut the wrapping. Cut the shipping straps securing the enclosure to the pallet. Carefully remove the plastic stretch-wrap surrounding the enclosure.



The plastic shipping straps are the only means of securing the enclosure to the pallet. Be sure that the enclosure is in an upright and level position before cutting the straps.

- 3 Remove the cardboard cover, four tall cardboard corner protectors, two expanded plastic spacers, and the cardboard base protector.

Note: *Save the pallet if you intend to reship the enclosure in the future.*

Continued on next page

Preparing to Install the NetShelter *continued*

Unpacking the Enclosure, continued

- 4 Carefully roll the enclosure assembly toward the rear of the pallet until the rear casters clear the back edge of the pallet. Continue to slide the enclosure rearward until the rear casters make contact with the floor and the front casters clear the edge of the pallet. With one person on each side of the enclosure, ease the enclosure assembly off of the pallet and to the floor.
 - 5 Inspect the enclosure for shipping damage. If damaged, contact APC technical support at the number listed on the rear cover of this manual.
-

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Preparing to Install the NetShelter *continued*

Taking Inventory

After unpacking the enclosure, you should ensure that all required components and hardware have been shipped with the enclosure. See “Main Assembly Inventory” on page 5 for a list of items that should be included with each model of NetShelter enclosure.

Note: If any items are missing, please contact American Power Conversion technical support to obtain a replacement. See the rear cover of this manual for the technical support numbers.

Configuration

Before installing your NetShelter, you should give some thought to the location of components within the enclosure. You must consider the proximity needed by some components, ergonomics of keyboards and video monitors, and the maximizing of U-space.

APC now offers NetShelter Configurator, a new software tool to help you configure your NetShelter enclosure. With NetShelter Configurator, you can maximize the available U-space of your enclosure(s) and customize the configuration.

To use NetShelter Configurator, download it from the APC Web site at the address listed on the back of this manual.

Blanking Panels



In order to maintain proper air flow, empty vertical enclosure space should be covered with blanking panels (AR8101 not included). Improper air flow could damage the installed components.

Chapter 2 Setting Up the Enclosure

Preliminary Information

Introduction

The enclosure is complete upon arrival and no further assembly is needed. However, you may want to make adjustments in order to accommodate particular components or to customize the enclosure for your site. These adjustments are covered later in this chapter.

Location of Keys and Mounting Hardware

All items are part of the enclosure assembly with the exception of the keys and the mounting hardware. The keys can be found inside the enclosure, fastened to the top of the enclosure on the vertical mounting rails. The bag of mounting hardware is fastened in the bottom of the enclosure. Remove the side panel to gain access to the inside of the enclosure.

Warning



To avoid damage or injury, make sure that the enclosure has been moved to its permanent location and leveled before it is loaded.

Leveling the Enclosure

Leveling Feet

Leveling feet are attached to the underside of the enclosure at each corner. Two leveling feet are also attached to the underside of the detachable feet. The leveling feet are designed to help provide a stable base in the event of an uneven floor surface. They are not intended to compensate for a badly sloped surface.

Leveling Procedure

To ensure that the enclosure is stable and level:

- 1 Use a spirit level to ensure that the enclosure does not lean appreciably in any direction. If there is a substantial lean, move the enclosure to a location in which it does not lean.
 - 2 Fit a 12 mm open-end wrench to the hex nut just above the round pad on the bottom of the leveling foot. Turn the wrench clockwise to extend the leveling foot until it makes firm contact with the floor surface.
 - 3 Repeat the operation for each of the remaining leveling feet.
-

Warning



You must stabilize the enclosure before installing any components. Failure to do so could allow the enclosure to tip over and cause personal injury or property damage. For instructions on stabilizing the NetShelter, refer to the sections that follow.

Stabilizing the NetShelter

Stabilizing Kits

American Power Conversion offers three stabilizing kits for on-site installation.

- AR8110 – Detachable Feet Kit, consisting of two feet and mounting hardware that can be attached to the front of the enclosure with 8 mm bolts. For further information, see “Detachable Feet” on page 15.
 - AR8111 – Stabilizer Plate Kit, consisting of one front plate, two side plates, and mounting hardware. These plates are attached to the enclosure frame by using 8 mm bolts. These stabilizing plates may be bolted to the floor to add stability. For further information, see “Stabilizer Plate Kit” on page 17.
 - AR8112 – Bolt Down Kit consisting of four brackets and mounting hardware. These brackets attach to the enclosure frame on the sides (on the exterior or the interior) using 8 mm bolts. These brackets must be bolted to the floor to be used as stabilizers. For further information, see “Bolt Down Kit” on page 18.
-

Warning



Bolt down brackets do not stabilize the enclosure unless fastened to the enclosure AND the floor.

Detachable Feet

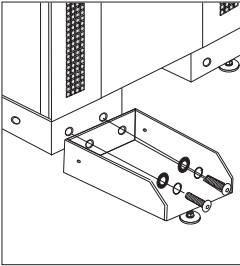
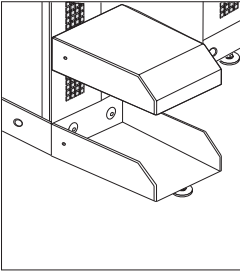
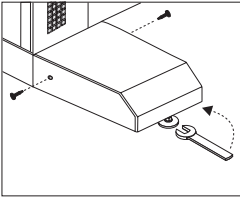
Introduction

The AR1000 and AR1001 enclosures are shipped with the detachable feet installed. If you choose to use an alternate form of stabilization (see “Stabilizing Kits” on page 14), you will need to remove the detachable feet.

Removing Detachable Feet: Figure 5

To remove the detachable feet:

- 1 Remove the retaining clips from both sides of each detachable foot.
- 2 Lift the cover off the base in a vertical motion.
- 3 Remove the two 8 mm bolts to remove each foot.



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Detachable Feet *continued*

Attaching the Feet

To attach the feet, refer to Figure 5 in reverse order and:

- 1 Align the holes on the back of the detachable feet with the holes on the front of the NetShelter plinths.
- 2 Insert an 8 mm bolt with the a flat washer and a lock washer (as pictured) for each hole.
- 3 Place the detachable foot cover over each foot, aligning the retaining clip holes. Insert retaining clips.
- 4 Adjust leveling feet, if necessary.

Stabilizer Plate Kit

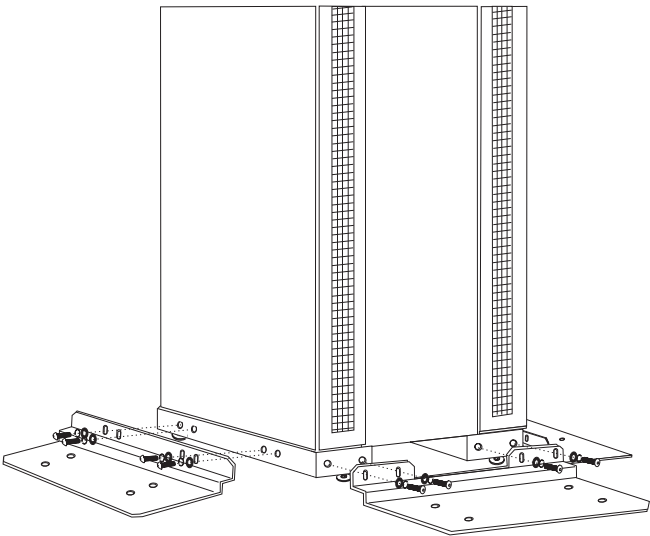
Introduction

American Power Conversion offers a Stabilizer Plate Kit (AR8111) which can be purchased separately and installed on any NetShelter model.

The AR1100 comes installed with the front stabilization plate only. If you choose to use an alternate form of stabilization, you will need to remove the front plate. To remove it, simply remove the 8 mm bolts that secure it to the unit.

Installing the Stabilizer Plates: Figure 6

To install the Stabilizer Plate Kit on your NetShelter, refer to Figure 6.



Bolt Down Kit

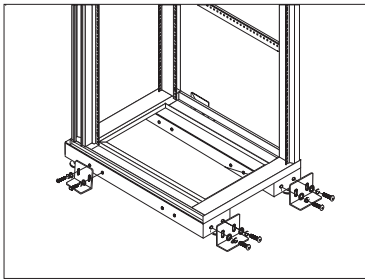
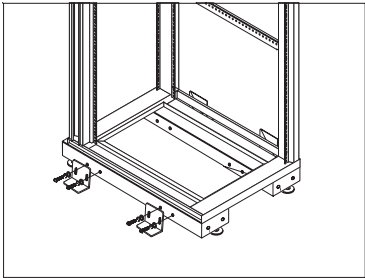
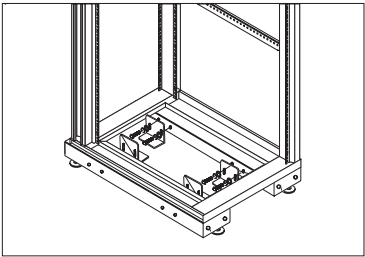
Introduction

American Power Conversion offers a Bolt Down Kit (AR8112) which can be purchased separately and installed on any NetShelter model.

Bolt Down Installation: Figure 7

The Bolt Down Kit can be installed in three ways, as shown in Figure 7.

- Inside mount
- Outside mount
- Front and side mount



Side Panels

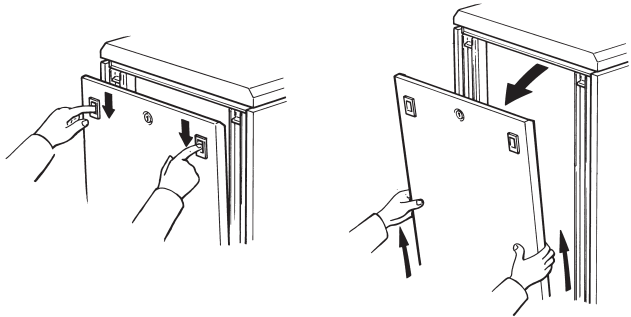
**Removing Side
Panels:
Figure 8**

The side panels may be removed from the enclosure in order to facilitate access to the interior. To remove the side panels:

- 1 If the side panel is locked, insert the key into the lock at the top of the panel and rotate 180° clockwise to unlock the panel.
- 2 Slide both panel latches down, at the same time tipping the top of the panel toward you.

Damage to the hooks at the base of the side panels may occur if the top of the panel is tipped too far.

- 3 Release the latches and lift the panel off the enclosure.



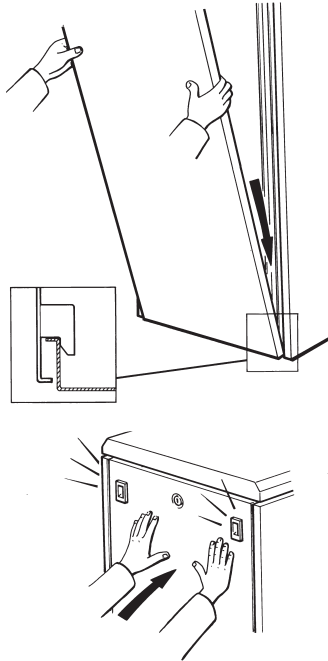
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Side Panels *continued*

**Installing Side
Panels:
Figure 9**

To install the side panels:

- 1 Lift the panel and place it onto the horizontal rail at the bottom of the enclosure frame. Make sure that the hooks at the bottom of the panel are engaged securely with the frame.
- 2 Slide both hands toward the top of the side panel and push the panel firmly against the enclosure until both latches snap and the panel is secure.
- 3 You may use the key to lock the top of the side panel.



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Side Panels *continued*

Warning



The hooks at the bottom of the side panels are not designed to support the panel unless the latches are engaged. Damage to the side panel or enclosure could result if the top of the panel is allowed to remain unlatched or unsupported.

Lock

Unlocking Door of 42U Models

To unlock and open the door of NetShelter 42U models AR1000 and AR1001:

- 1 Gently pull the bottom of the flexible dust cover toward you and rotate it 90° to the parked/storage position.
 - 2 Insert the key into the lock and turn it counterclockwise.
 - 3 Pull the bottom of the door handle toward you and rotate 90° in either direction to release the latch.
-

Unlocking Door of 22U Model

To unlock and open the door of NetShelter 22U model AR1100:

- 1 Insert key into lock and turn it clockwise.
 - 2 Turn the handle clockwise to release the latch.
-

Reversing Door

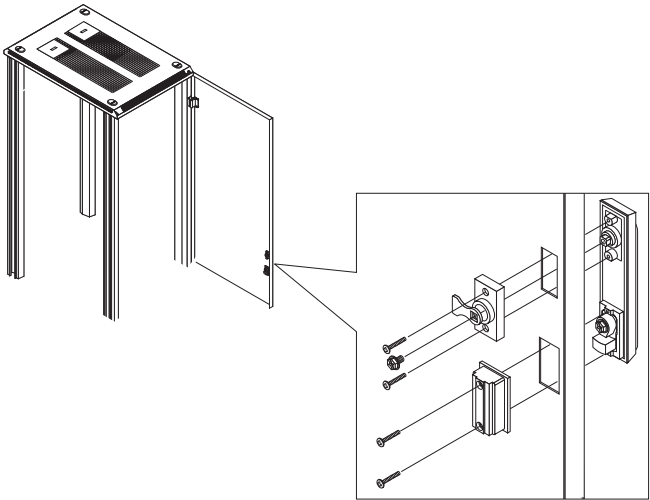
Overview

The front and rear doors may be removed or reversed to accommodate various site configurations. You can remove doors and hinges altogether to facilitate access to the interior of the enclosure.

Reversing Front or Rear Door (42U): Figure 10

To reverse the front or rear door:

- 1 AR1000 and AR1100: Remove both side panels. (For instructions, see “Removing Side Panels: Figure 8” on page 19.)
- 2 Reverse the door handle:
 - a AR1000 and AR1001: Use a slotted or Phillips head screwdriver to remove the screw holding the door latch to the door handle assembly. Remove the four Phillips screws from the rear of the door handle assembly and remove the handle assembly.

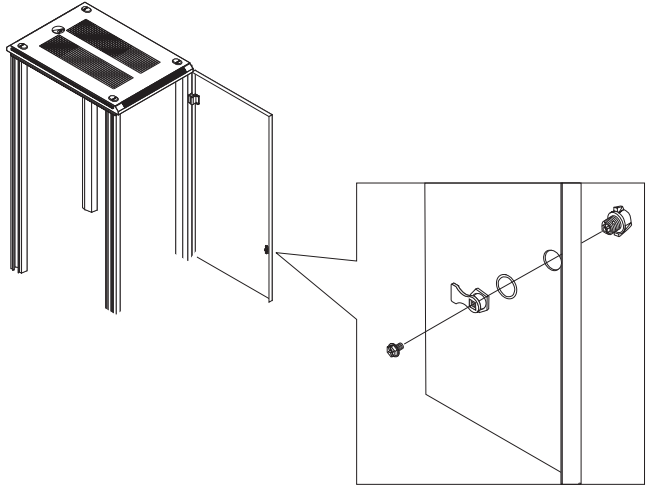


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Reversing Door *continued*

**Reversing Front
or Rear Door
(22U):
Figure 11**

AR1100: Use a 19mm wrench to loosen the nut securing the lock to the door.



- b Rotate the door handle assembly 180° and reinstall using the screws or nut removed in the preceding step.
 - c AR1000 and AR1001: Reinstall the door latch to the rear of the door handle assembly with socket head screw.
- 3 Remove the Door
- a Remove the hinge pins by pulling them straight up until they are clear of the hinges.

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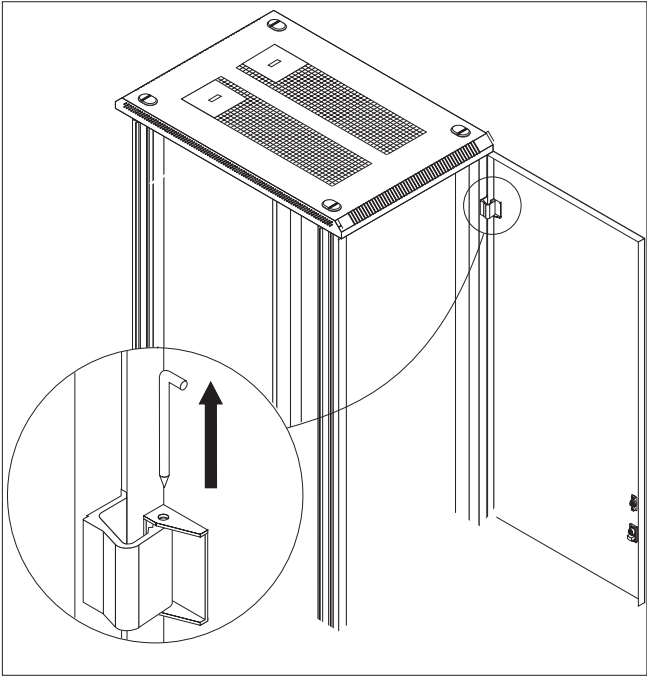
Reversing Door *continued*

Reversing Front
or Rear Door
(Removing
Hinges):
Figure 12



To avoid personal injury or damage to the enclosure, one person should support the door while another removes the pins from the hinges.

- b Lift the door from the hinges and place it where it will not be damaged.



Continued on next page

Reversing Door *continued*

Reversing Front or Rear Door, continued

- 4 Remove and reinstall hinges, bumpers, and latch plate.
 - a Use a 5 mm hex key (included) to remove the socket head screw holding each of the hinges to the frame of the enclosure. Note the location and distance between all items being removed. You will need to duplicate this positioning when reinstalling.

***Note:** Hold the back of the socket head screws with your fingers to prevent the nut from dropping into the bottom of the enclosure assembly when the screw is removed.*
 - b Remove the socket head screws holding the latch plate and the two door bumpers in the same manner.
 - c Reinstall the four hinges on the opposite side of the enclosure. Use the same socket head screws that secured the hinges originally.

***Note:** Be sure to install the hinges so that the spacing between each hinge is the same as before removal and that the vertical relationship between the hinges and the enclosure frame is maintained.*

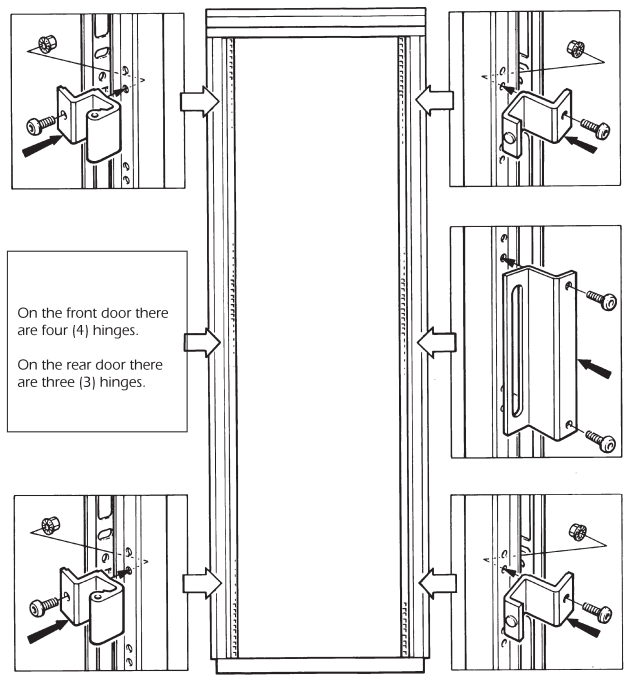
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Reversing Door *continued*

**Reversing Front
or Rear Door
(Removing
Hinges):
Figure 13**

- d Secure the door hinges by threading the hex nuts onto the screws. Hand-tighten the screws; they will be tightened firmly later in the procedure.
- e Reinstall the latch plate and the two door bumpers. These should be installed on the side of the enclosure frame opposite the door hinges. Be sure to maintain the original spacing between them, as well as their vertical relationship with the enclosure frame.

Note: AR1100 has only two hinges on both front and rear.



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Reversing Door *continued*

**Reversing Front
or Rear Door
(Reinstalling
Hinges):
Figure 14**

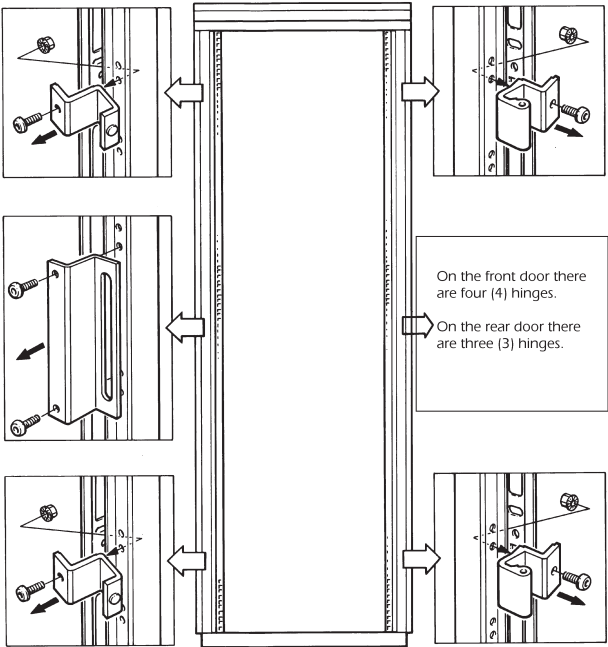


5 Reinstall the door assembly.

To avoid personal injury or damage to the enclosure, one person should support the door while another inserts the pins through the hinges.

- a Set the door assembly on the newly positioned hinges and insert a hinge pin completely through each of the door brackets and hinges.
- b Make sure the door opens and closes properly and then firmly tighten the socket head screws securing the hinges to the enclosure frame.

Note: AR1100 has only two hinges on both front and rear.



6 Reinstall the side panels. (For instructions, see “Side Panels *continued*” on page 20.)

Caged Nuts

Introduction

During installation of components, you may need to install or remove caged nuts from the enclosure frame. Follow these steps when installing or removing caged nuts from the enclosure.

Warning

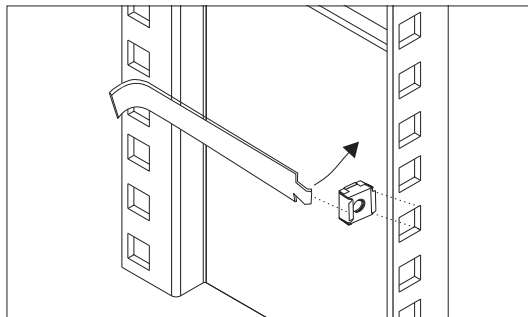


Install caged nuts horizontally; that is, the ears of the caged nut should engage the sides of the mounting hole. Do NOT install them with the ears engaging the top and bottom of the mounting hole.

Installing Caged Nuts: Figure 15

To install caged nuts:

- 1 Make sure that the caged nuts are installed on the proper side of the mounting rails. The mounting rails should be between the caged nut assembly and the mounted components.
- 2 Insert the caged nut into the mounting hole by hooking one ear of the caged nut assembly through the far side of the hole.



Continued on next page

Caged Nuts *continued*

Installing Caged Nuts

- 3 Place the caged nut tool on the other ear of the caged nut and press inward to force the caged nut into position.
 - 4 Detach the tool from the caged nut.
-

Removing Caged Nuts

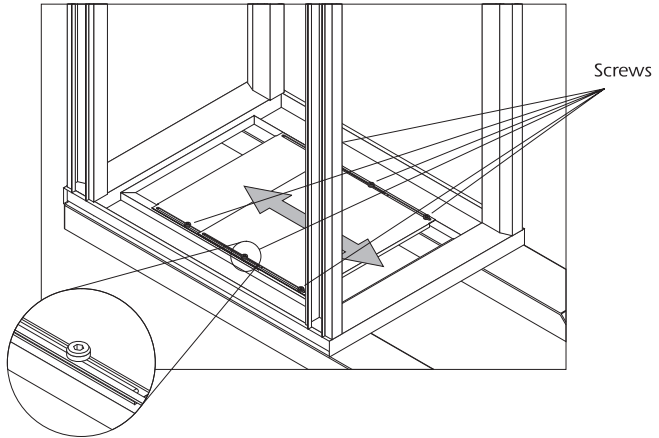
To remove caged nuts, refer to the preceding illustration and:

- 1 Make sure that mounting screws have been removed from the caged nut assembly.
 - 2 Hook the caged nut tool along an ear of the caged nut and press inward.
 - 3 When the ear is clear of the mounting hole, pull the caged nut gently through the hole.
 - 4 Grasp the caged nut before releasing the caged nut tool.
-

Cable Management

**Bottom Cable
Entry Panels:
Figure 16**

The two bottom cable entry panels may be adjusted, or removed altogether, to vary the size of the opening(s) in the bottom of the enclosure.



Adjusting Cable Panels

To adjust the position of the cable entry panels:

- 1 Use a 5 mm hex key (included) to loosen the six socket head screws that secure the two cable entry panels to the base of the enclosure.
- 2 Slide either or both of the panels forward or rearward until the opening(s) are of the desired size.
- 3 Retighten the six socket head screws to secure the panels in place.

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Cable Management *continued*

Removing Cable Panels

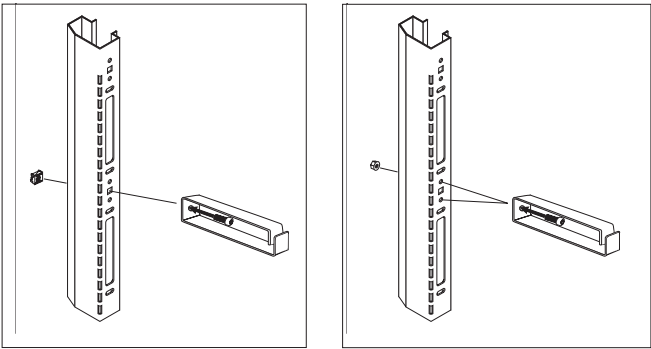
To remove the cable entry panels:

- 1 Use a 5 mm hex key (included) to remove the six socket head screws that secure the two cable entry panels to the base of the enclosure.
 - 2 Remove either or both of the panels as desired.
 - 3 Replace the six socket head screws in their original position to avoid misplacing them.
-

Cable Management Hoops: Figure 17

Three cable management hoops are provided with each Net-Shelter enclosure. These hoops may be mounted on any of the four vertical mounting rails. Secure the hoop to a round hole in the vertical mounting rail using the socket head screw and nut. These hoops may also be installed to the square holes using a caged nut and socket head screw.

***Note:** For clarity, the cable management hoops in Figure 17 appear opening to the side. Turn the cable management hoops so that they open upward.*



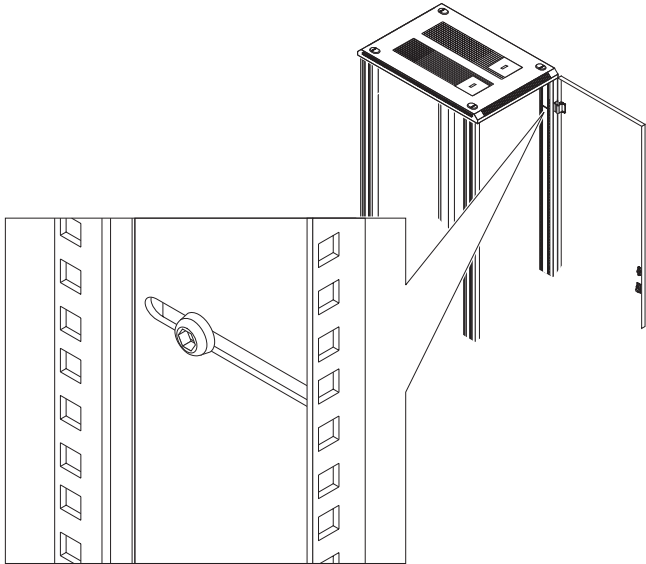
Vertical Mounting Rails

Introduction

The vertical mounting rails are factory-installed in the proper position for use with Compaq rack-mountable equipment (depth of 29.13 in., 739 mm). The rear vertical mounting rails can be adjusted to the front or rear a total of 2.35 in. (60 mm) to accommodate different rails or components with various depths. In addition, both the front and rear vertical mounting rails can be moved forward or back within the enclosure by attaching them to the horizontal cross members. The following sections describe the procedures for adjusting the position of the rear vertical mounting rails and moving the front or rear mounting rails within the enclosure.

Location of Mounting Rail Adjustment Screws: Figure 18

Figure 18 shows the location of the screws that govern the position of the vertical mounting rails.



Continued on next page

Vertical Mounting Rails *continued*

**Adjusting Rear
Vertical
Mounting Rails**

To adjust the position of the rear mounting rails:

- 1 Open the rear door of the enclosure.
 - 2 Using the 5 mm hex key wrench (included) loosen (but do not remove) the four socket head screws securing one of the rear vertical mounting rail to the frame of the enclosure.
 - 3 Move the vertical mounting rail forward or rearward until it is in the desired position.
 - 4 Tighten each of the socket head screws securely.
 - 5 Repeat the operation for the remaining rear vertical mounting rail.
-

**Moving the
Front or Rear
Vertical
Mounting Rails**

To reposition the front or rear vertical mounting rails:

- 1 Remove the side panels from the enclosure. For instructions, see “Removing Side Panels: Figure 8” on page 19.
 - 2 Using the 5 mm hex key wrench (included with the enclosure), remove the four socket head screws securing the vertical mounting rail to the frame of the enclosure. Retain the hex nuts for use in reattaching the mounting rails.
-

Continued on next page

Vertical Mounting Rails *continued*

**Moving the
Front or Rear
Vertical
Mounting Rails,
continued**

-
- 3 Move the vertical mounting rail forward or rearward to the desired position and secure to each horizontal cross member. It may be necessary to adjust the position of the horizontal cross member up or down to line up to the mounting channel in the rear mounting rail.
 - a Insert a socket head screw through the vertical mounting rail and then through a hole in the upper horizontal cross member.
 - b Thread a nut onto the screw and tighten the screw.
 - c Repeat the previous steps for the lower horizontal cross member.
 - 4 Repeat steps **2** and **3** for each of the vertical mounting rails that must be moved.
-

**Horizontal Cross
Members**

Two horizontal cross members are installed between the vertical frame members on each side of the enclosure. These horizontal cross members are intended for use in supporting the vertical mounting rails, as well as in cable management.

Continued on next page

Vertical Mounting Rails *continued*

Moving Horizontal Cross Members

To move the horizontal cross members to a different position:

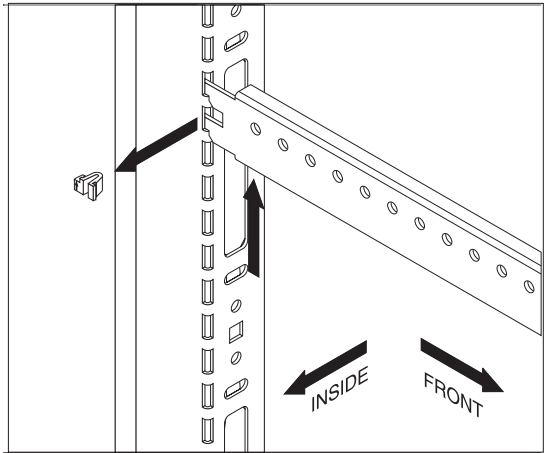
- 1 Remove the side panels from the enclosure. For instructions, see “Removing Side Panels: Figure 8” on page 19.
- 2 Move the rear vertical mounting rails to their rearmost position, or remove them completely. For detailed instructions on this procedure, see the previous section.
- 3 Compress the small plastic locking clip at one end of the cross member and push the clip towards the interior until clear. (Save the clip.)
- 4 Repeat the previous step for the clip at the opposite end of the cross member.
- 5 Slide each end of the horizontal cross member upward approximately $\frac{1}{2}$ inch and remove it toward the interior of the enclosure.
- 6 Locate the new position for the cross member and insert the hooks at either end of the cross member into the desired mounting slots. Make sure that the cross member is installed horizontally; both ends of the cross member should be the same distance from the top of the vertical frame members.

Continued on next page

Vertical Mounting Rails *continued*

**Moving
Horizontal Cross
Members:
Figure 19**

- 7 Insert the plastic locking clips through the appropriate holes at each end of the horizontal cross member.
- 8 Reinstall the side panels. For instructions, see “Side Panels *continued*” on page 20.



Joining Enclosures Together

Introduction

Installations may be expanded by joining AR1001 expansion enclosure to an existing AR1000 stand-alone enclosure. This is accomplished by removing one side panel of the AR1000 enclosure and attaching the AR1000 to the open side of the last AR1001 enclosure. Baying hardware is included with the AR1001 enclosure, as well as vertical and horizontal trim hardware to cover the gap between the joined enclosures for a finished appearance.

Before Joining Enclosures

It is sometimes necessary to make changes to enclosure configurations when joining enclosures together. Most often this means reversing doors on one of the enclosures or moving the baying trim from one side of a enclosure to the other. The process of joining enclosures will go more smoothly if this determination is made before work is started.

Joining Enclosures

To join an AR1001 expansion enclosure to an AR1000 standard enclosure:

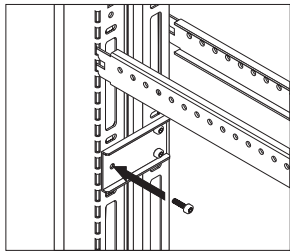
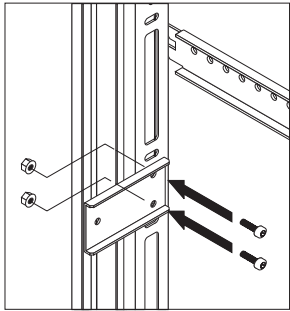
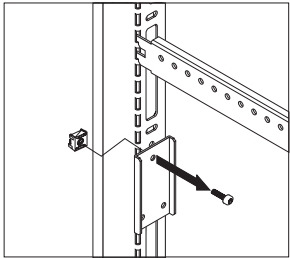
- 1 Reverse the door(s), if necessary. For instructions, see “Reversing Door” on page 23.
 - 2 Remove the side panel from the existing enclosure or bay of enclosures. For instructions, see “Removing Side Panels: Figure 8” on page 19.
-

Continued on next page

Joining Enclosures Together *continued*

**Joining
Enclosures
(Connecting
Brackets):
Figure 20**

- 3 If necessary, move the horizontal and vertical trim from one side of the AR1001 to the other side. For instructions, see “Moving Horizontal and Vertical Trim (Removing Roof): Figure 21” on page 42.
- 4 Connect the four baying brackets pre-installed on the AR1001 to the adjacent enclosure. Refer to the illustration that follows.



Continued on next page

Joining Enclosures Together *continued*

Joining Enclosures, continued

- a Using the 5 mm hex key (included), loosen the socket head screw securing the baying bracket to the AR1001 enclosure. The socket head screw is attached to a pre-installed caged nut.
- b Rotate the bracket approximately 90° and push the two enclosures together until the two holes in the free end of the mounting bracket are aligned with two empty holes in the frame of the adjacent enclosure (mark these two holes).
- c Remove the single socket head screw securing the mounting bracket to the enclosure. Pull the enclosures apart. Secure the mounting bracket to the frame of the adjacent enclosure with two socket head screws and nuts (included).

Note: *Do not tighten the screws at this time.*

They will be secured after all four mounting brackets are installed.

- d Repeat steps **a** through **c** for each of the remaining three mounting brackets.

Continued on next page

Joining Enclosures Together *continued*

**Joining
Enclosures,
continued**

- e Position the enclosures beside each other so that there is approximately ½ in. between the vertical rails of the two enclosures.
 - f Insert a socket head screw through the single hole in the baying bracket and secure it to the caged nut pre-installed in the AR1001 enclosure.
 - g Repeat this step for each of the remaining three baying brackets.
 - h Make sure that the two enclosures are properly aligned and tighten all three screws on each of the four mounting brackets.
- 5 Reinstall the side panel(s), if necessary. For instructions, see “Side Panels continued” on page 20.
- 6 Reinstall the door(s), if necessary. For instructions, see “Reversing Door” on page 23.
-

**Horizontal and
Vertical Trim**

The horizontal and vertical trim is pre-installed to one side of the AR1001 expansion enclosure. It may be necessary to move the trim to the other side of the enclosure if dictated by your site configuration.

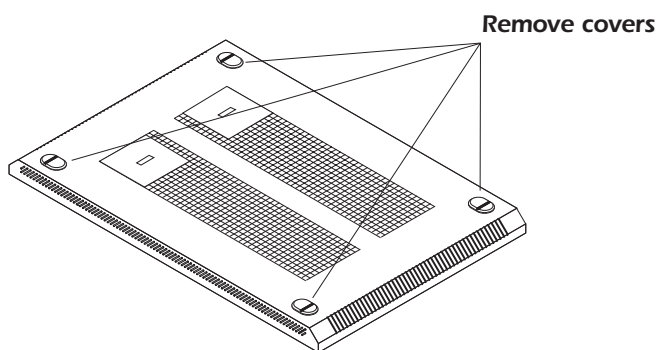
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Joining Enclosures Together *continued*

Moving Horizontal and Vertical Trim (Removing Roof): Figure 21

To move the horizontal and vertical trim from one side of the enclosure to the other:

- 1 Remove the doors from the AR1001 enclosure assembly. For instructions, see “Reversing Door” on page 23.
- 2 Remove the roof from the enclosure assembly.



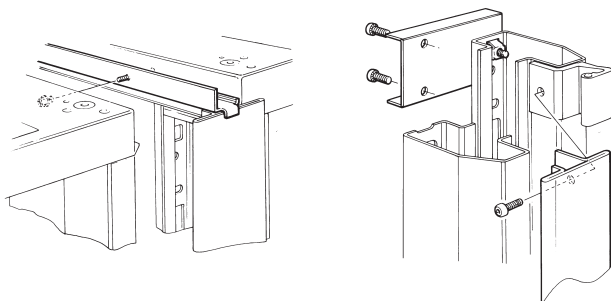
- a Carefully pry the oval plastic covers from each corner of the roof with a flat blade screwdriver.
- b Remove the four socket head screws with the 5 mm hex key (included).
- c Lift the roof clear from the enclosure assembly and set aside.

Continued on next page

Joining Enclosures Together *continued*

Moving Horizontal and Vertical Trim (Removing Trim): Figure 22

- 3 Using the 5 mm hex key, remove the socket head screws securing the horizontal trim to the side of the enclosure. Be sure to retain the screws and hex nuts for later reassembly.



- 4 Using the 5 mm hex key, remove the socket head screws securing the vertical trim to the side of the enclosure.

Note: *The screws used to fasten the vertical trim to the enclosure also secure the hinge blocks or door bumpers to the enclosure. Unless you are reversing or removing the doors, it is recommended that these screws be replaced in their appropriate holes immediately so as to minimize the risk of moving the hinge blocks from their proper position.*

Continued on next page

Joining Enclosures Together *continued*

Moving Horizontal and Vertical Trim, continued

- 5 Reinstall the vertical trim to the opposite side of the enclosure.
 - a Remove the socket head screw securing the upper hinge block or door bumper to the frame of the enclosure.
 - b Insert the screw through the upper hole in the vertical trim, then through the hinge block or door bumper and into the original hole in the frame of the enclosure. Replace the hex nut loosely on the screw.
 - c Repeat the step above for the lower hole in the vertical trim.
 - d Tighten the screws securing the vertical trim to the enclosure assembly.
- 6 Reinstall the horizontal trim to the side of the enclosure.
 - a Insert a socket head screw through the mounting hole in the horizontal trim, then through the appropriate hole in the frame of the enclosure. Replace the hex nut loosely on the screw.

Continued on next page

Joining Enclosures Together *continued*

Moving Horizontal and Vertical Trim, continued

- b Repeat the step above for the other holes in the horizontal trim.

***Note:** Make sure that the small ear at the end of the horizontal trim is hooked over the top of the vertical trim.*

- c Tighten the screws securing the horizontal trim to the enclosure assembly.
- 7 Reinstall any side panels required. For instructions, see “Side Panels *continued*” on page 20.
 - 8 Reinstall the top of the enclosure.
 - a Replace the four socket head screws with the 5 mm hex key (included).
 - b Replace the plastic covers at each corner by snapping them down into place.
-

Chapter 3 Product Specifications

Warranty Information

Limited Warranty

American Power Conversion (APC) warrants NetShelter to be free from defects in materials and workmanship for a period of three years from the date of purchase. Its obligation under this warranty is limited to repairing or replacing, at its own sole option, any such defective products. This warranty does not apply to equipment which has been damaged by accident, negligence, or misapplication or has been altered or modified in any way. This warranty applies only to the original purchaser.

Obtaining Service

To obtain service under warranty you must obtain a Returned Material Authorization (RMA) number from APC or a designated APC service center. Products must be returned to APC or an APC service center with transportation charges prepaid and must be accompanied by a brief description of the problem encountered and proof of date and place of purchase.

Continued on next page

Warranty Information *continued*

**Warranty
Limitations**

Except as provided herein, American Power Conversion makes no warranties, express or implied, including warranties of merchantability and fitness for a particular purpose. Some jurisdictions do not permit limitation or exclusion of implied warranties; therefore, the aforesaid limitation(s) or exclusion(s) may not apply to the purchaser.

Except as provided above, in no event will APC be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of this product, even if advised of the possibility of such damage.

Specifically, APC is not liable for any costs, such as lost profits or revenue, loss of equipment, loss of use of equipment, loss of software, loss of data, costs of substitutes, claims by third parties, or otherwise. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Life Support Policy

General Policy

As a general policy, American Power Conversion (APC) does not recommend the use of any of its products in life support applications where failure or malfunction of the APC product can be reasonably expected to cause failure of the life support device or to significantly affect its safety or effectiveness. APC does not recommend the use of any of its products in direct patient care. APC will not knowingly sell its products for use in such applications unless it receives in writing assurances satisfactory to APC that (a) the risks of injury or damage have been minimized, (b) the customer assumes all such risks, and (c) the liability of American Power Conversion is adequately protected under the circumstances.

Examples of Life Support Devices

Examples of devices considered to be life support devices are neonatal oxygen analyzers, nerve stimulators (whether used for anesthesia, pain relief, or other purposes), autotransfusion devices, blood pumps, defibrillators, arrhythmia detectors and alarms, pacemakers, hemodialysis systems, peritoneal dialysis systems, neonatal ventilator incubators, ventilators for both adults and infants, anesthesia ventilators, and infusion pumps as well as any other devices designated as “critical” by the U.S. FDA.

Continued on next page

Life Support Policy *continued*

**Examples of Life
Support Devices,
continued**

Hospital-grade wiring devices and leakage current may be ordered as options on many APC UPS systems. APC does not claim that units with this modification are certified or listed as Hospital Grade by APC or any other organization. Therefore these units do not meet the requirements for use in direct patient care.

Specifications

Specifications:
Table 3

Table 3 gives the product specifications for NetShelter.

Item		Measurement
Height	AR1000 & AR1001	81.75 in. (207.65 cm)
	AR1100	46.00 in. (116.84)
Width (all enclosures)		23.50 in. (59.69 cm)
Depth (all enclosures)	with feet	42.00 in. (106.68 cm)
	without feet	34.38 in. (87.31 cm)
Clearance (for wiring between front door and vertical rail)		3.20 in. (8.13 cm)
Net Weight	AR1000	273 lb (123 kg)
	AR1001	207 lb (93 kg)
	AR1100	196 lb (88 kg)
Weight of Loaded Enclosure (maximum)		1100 lb (500 kg)
Ventilation (front door)	AR1000 & AR1001	147 sq. in. (948 sq. cm)
	AR1100	74 sq. in. (477 sq. cm)
Ventilation (rear door)	AR1000 & AR1001	785 sq. in. (5064 sq. cm)
	AR1100	381 sq. in. (2459 sq. cm)
Ventilation (roof, all enclosures)		159 sq. in. (1027 sq. cm)
Equipment Capacity (h × d × w)	AR1000 & AR1001	42U [†] × 29.13 in. (74.0 cm) × 17.75 in. (45.1 cm)
	AR1100	22U × 29.13 in. (74.0 cm) × 17.75 in. (45.1 cm)

† One U = 1.75 in. (4.44 cm).



Toll free technical support:

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Czech Republic	0 800 102063
Denmark	800 18 153
Finland	9800 13 374
France	0 800 906 483
Germany	01300818907
Holland	0800 0224655
Hungary	00800 12221
Ireland	1 800 702000 x 2045
Israel	177 353 2206
Italy	1678 74731
Japan	0120-80-60-90
Luxembourg	0800 2091
Norway	800 11 632
Poland	00800 353 1202
Portugal	050 553182
South Africa	0800 994206
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Sweden	020 795 419
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Serial number: _____

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